

Scatterplots

Notes:

- Shows the relationship between 2 _____ variables
- Can show categorical variables by _____
- Individuals are represented by the _____ on the plot
- Explanatory Variable:
 - On the _____ axis
 - Explains or causes the change in the _____ variable
- Response Variable:
 - On the _____ axis
 - Measures the outcome of an experiment or study

Interpreting Scatterplots:

Overall pattern

- Get a sense of what the data/plot looks like in general, then comment on the following 3 things

(1) Form

Linear:

Curved:

(2) Direction

Negative Association

Positive Association

(1) Strength-

-
- Use the following words (or combinations of these):
 -
 -
 -
 -

Examples:



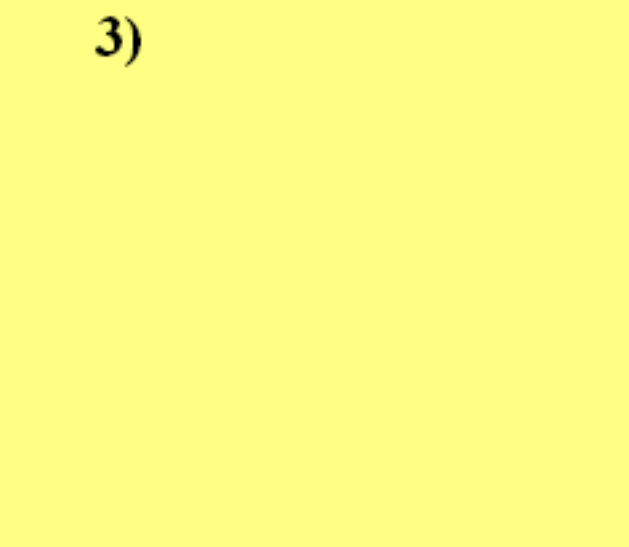
Strong

Moderate

Weak

Scattered

Examples: Describing Scatterplots

1)  2)  3) 

* You try the next 4 examples

* Now complete worksheet 2.1

Worksheet 2.1- ANSWERS

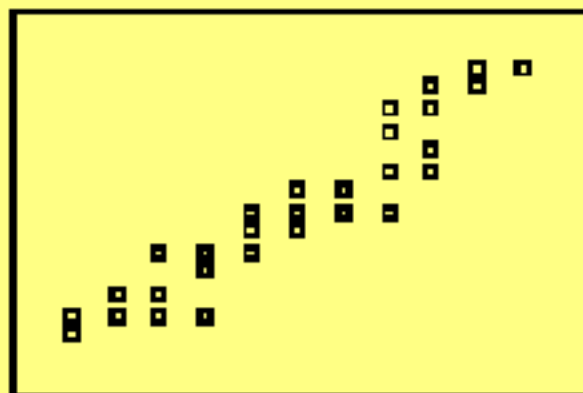
① Chart:

	Strong	Mod	Weak
-	C	D	F
+	E	A	B

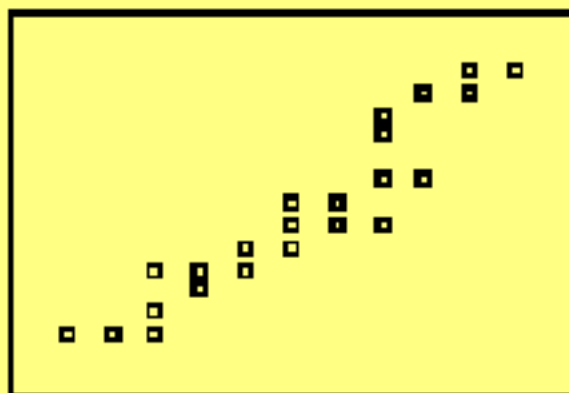
- ②
- | | |
|-------------------|-------------------|
| a) +, strong | f) -, mod. |
| b) +, mod. strong | g) +, strong |
| c) Scattered | h) +, mod. strong |
| d) +, mod. | |
| e) -, strong | |

WHAT PLOT HAS THE STRONGER RELATIONSHIP? BY HOW MUCH??

A



B



Correlation:

Symbol:

Definition:

Formula:

- Grouping/ Ungrouping
- How to make scatterplots on the calculator
- Deleting a point from a list
- Using the program CORR

CORRELATION COEFFICIENT: the last few notes....

- $-1 \leq r \leq 1$
 - $-1, 1 =$ straight line
 - close to $-1, 1 \Rightarrow$ strong linear
 - close to $0 \Rightarrow$ weak linear
 - r has no units \rightarrow standardized x and y
 - non-resistant
 - doesn't matter which var. is x and y
- $$r = \frac{1}{n-1} \sum \left(\frac{x_i - \bar{x}}{s_x} \right) \left(\frac{y_i - \bar{y}}{s_y} \right)$$
 commutative
- p. 30 - examples

COEFFICIENT OF DETERMINATION:

$$r^2 = \%$$

What is it?

measures the % of the change in y-var
that is b/c of change in x-var.

How do we interpret it?

$$r = -0.84$$

$$r^2 = 0.7056 \Rightarrow 70.56\%$$

Ex:

70.56% of the ^{variation} change in heart dis. rate
is b/c (or due to) ^{explained by} the change in alcohol consump.
_{the linear regression line}

*

— % of Δ y-var is due to Δ x-var.

$$y = mx + b$$